

## REMARKS

Claims 1-22 are presently pending. Claims 1, 6, 8, 15 and 22 are amended. Reconsideration of this application in light of the following remarks is respectfully requested.

### **Rejection under 35 U.S.C. § 103(a)**

Claims 1-22 stand rejected under 35 U.S.C. § 103(a) over “Natural Fracture Characterization Using Passive Seismic Illumination” by Kurt T. Nihei (“Nihei”). This rejection is respectfully traversed.

As the PTO recognizes in MPEP §2143.01, “[t]o establish a prima facie case of obviousness, . . . the prior art reference . . . must teach or suggest all the claim limitations.” Applicant respectfully submits that Nihei does not teach or suggest all of the claim limitations in independent claims 1, 8, 15 and 22.

### **Independent Claim 1**

Claim 1 claims, in part, “receiving, at a sensor in an observation well, a far-field point-source signal profile for a microseismic event.” On the other hand, Nihei teaches that “[t]he objective is to explore the possibility of imaging fractures using passive seismic data recorded by a multicomponent surface sensor array.” (Nihei, pg. 14, emphasis added). Thus, Nihei teaches the use of surface sensor arrays to detect passive seismic data, and does not teach or suggest “receiving, at a sensor in an observation well, a far-field point-source signal profile for a microseismic event,” as is claimed in claim 1. Therefore, Nihei does not teach all of the claim limitations of claim 1, and Applicants respectfully request withdrawal of the rejection of independent claim 1.

As claims 2-7 depend from and further limit independent claim 1, Applicants respectfully request withdrawal of the rejection of claims 2-7.

### **Independent Claim 8**

Claim 8 claims, in part, “generating a local microseismic event.” On the other hand, Nihei states that “utilizing local microseismicity produced by rock fracturing during the processes of reservoir production and fluid injection . . . are not useful as a means of prospecting for fractured reservoirs.” (Nihei, pg. 2, emphasis added). Rather than using local microseismicity, Nihei uses “local earthquakes” as seismic sources. (Nihei, pg. 1). Accordingly, Nihei does not teach or suggest “generating a local microseismic event,” as is claimed in claim 8. Therefore, Applicants respectfully request withdrawal of the rejection of independent claim 8.

As claims 9-14 depend from and further limit independent claim 1, Applicants respectfully request withdrawal of the rejection of claims 9-14.

### **Independent Claim 15**

Claim 15 claims, in part, “a memory comprising a program that extracts in the time-domain a data attribute information from a far-field point-source signal profile for a microseismic event, and calculates in the time-domain an estimate of the orientation of a single natural fracture based on the extracted data attribute information.” On the other hand, Nihei teaches that “short, closely spaced fractures will be below the resolution limits of typical passive and active seismic waves that can be reliably recorded by surface sensors.” (Nihei, pg. 3). Because of the resolution limits inherent in Nihei’s teachings, Nihei is incapable of detecting short, closely spaced fractures. Thus, if a person of ordinary skill in the art were to use the teachings of Nihei, such person would be incapable of detecting a single natural fracture. Accordingly, Nihei does not teach each and every limitation of claim 15. Therefore, Applicants respectfully request withdrawal of the rejection of independent claim 15.

As claims 16-21 depend from and further limit independent claim 15, Applicants respectfully request withdrawal of the rejection of claims 16-21.

### **Independent Claim 22**

Claim 22 claims, in part, “receiving, in an observation well, a far-field point-source signal profile for a microseismic event.” On the other hand, Nihei teaches that “[t]he objective is to explore the possibility of imaging fractures using passive seismic data recorded by a multicomponent surface sensor array.” (Nihei, pg. 14, emphasis added). Thus, Nihei teaches the use of surface sensor arrays to detect passive seismic data, and does not teach or suggest “means for receiving, at a sensor in an observation well, a far-field point-source signal profile for a microseismic event.” Therefore, Nihei does not teach all of the claim limitations of claim 22, and Applicants respectfully request withdrawal of the rejection of independent claim 22.

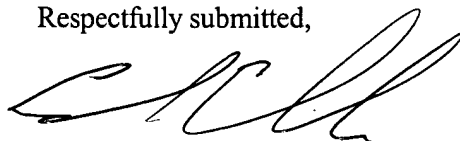
### **Conclusion**

It is clear from all of the foregoing that independent claims 1, 8, 15, and 22 are in condition for allowance. As dependent claims 2-7, 9-14 and 16-21 depend from and further limit independent claims 1, 8 and 15, respectively, Applicants submit that these claims are also in condition for allowance.

Applicants also note that the Examiner elected not to apply any of the following patents to claims 1-22: Sorrells et al. (5,996,726), Uhl et al. (5,774,419), and Withers (5,574,218). As the Examiner neither applied these patents in a rejection, nor provided any statutory basis for a rejection of any of Applicants’ claims under these patents, Applicants need not address these patents at this time.

An early formal notice of allowance of claims 1-22 is requested. The Examiner is invited to telephone Applicants' attorney at the number listed below if further assistance can be provided.

Respectfully submitted,



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